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ABSTRACT

The present study employed discrete trial procedures to compare the performance of skilled and less-skilled third and sixth grade readers (N=37) on picture, letter and word naming tasks. It was assumed that if lack of proficiency in reading skill is due to a general name-retrieval deficit, then the skilled readers would be able to name each stimulus type more rapidly than the less-skilled readers. However, if there is no such general name-retrieval deficit, and the deficiency centers around the ability to rapidly decode words, then the skilled readers, as opposed to the less-skilled readers, would only be more rapid in naming the words. (To examine the latter possibility, the subjects also performed tasks designed to assess their skills in phonological analysis.) Results indicated that a general name-retrieval deficit did not appear to account for the reading problems of the less-skilled readers. Instead, reading deficiency was associated with a general weakness in phonological analysis skills. (Author/MP)

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General Name-Retrieval and Phonological Analysis Abilities of Skilled and Less-Skilled Readers

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ABSTRACT

PICTURE, LETTER, AND WORD NAMING, AND PHONOLOGICAL ANALYSIS TASKS WERE PERFORMED BY SKILLED AND LESS-SKILLED THIRD AND SIXTH GRADE READERS. A GENERAL NAME-RETRIEVAL DEFICIT DID NOT APPEAR TO ACCOUNT FOR DIFFERENCES IN READING PROFICIENCY. INSTEAD, THE DEFICIENCY APPEARED TO CENTER AROUND A GENERAL WEAKNESS IN PHONOLOGICAL ANALYSIS SKILLS.

PROBLEM

One of the most fundamental subskills in reading involves the recognition of words. Reading researchers who differ greatly in theoretical persuasion agree that words must be processed rapidly in order for fluent reading to occur. Indeed, considerable empirical evidence documents the fact that skilled readers name words faster than less-skilled readers (e.g., Biemiller, 1977-1978; Perfetti and Hogaboam, 1975; Stanovich, 1981). However, the existence of a relationship between word naming speed and reading ability raises the question of whether the performance deficit displayed by less-skilled readers is due to a problem specific to word decoding or is, instead, due to a more general inability to rapidly process symbolic stimuli.

Some evidence suggests that a general rapid name-retrieval ability differentiates normal readers from dyslexic children and children who show severe reading deficits (e.g., Denckla and Rudel, 1976; Spring and Capps, 1974). For example, Denckla and Rudel (1976) found that dyslexic children named objects, colors, numbers, and letters slower than nondyslexic learning-disabled children, who in turn named the four stimulus sets slower than control children without dyslexia or learning disability. However, in contrast to these results, Seymour and Porpodas (1980) tested a small group of dyslexic subjects and found that while they had a severe deficit in word naming, they named pictures of objects as fast as nondyslexic subjects.

PERHAPS THE ONLY SAFE CONCLUSION AT THIS POINT IS THAT ALTHOUGH THERE HAVE BEEN INDICATIONS OF A GENERAL NAME-RETRIEVAL DEFICIT ON THE PART OF DYSLEXIC CHILDREN, DISCREPANT RESULTS DO EXIST AND FURTHER EMPIRICAL WORK APPEARS TO BE NECESSARY. REGARDING THE LATTER POINT, FUTURE RESEARCH MIGHT BE AIDED BY THE UTILIZATION OF MORE CONTROLLED AND ACCURATE METHODOLOGIES THAN HAVE BEEN EMPLOYED IN MUCH OF THE PREVIOUS RESEARCH. SPECIFICALLY, MOST STUDIES (E.G., DENCKLA AND RUDEL, 1976; SPRING AND CAPPS 1974) HAVE EMPLOYED A CONTINUOUS LIST PROCEDURE, WHEREBY SUBJECTS NAME A SERIES OF STIMULI, AND THEIR TIME TO NAME THE ENTIRE LIST IS MEASURED WITH A HAND-HELD STOPWATCH. HOWEVER, THE TIMES RESULTING FROM SUCH A PROCEDURE ARE VERY LIKELY TO BE IN PART DETERMINED BY VARIOUS SEQUENTIAL-RESPONSE, SCANNING, AND MOTOR-PRODUCTION STRATEGIES THAT SUBJECTS MAY ADOPT. AS A RESULT, THERE IS A GREAT NEED FOR THE MORE PRECISE DISCRETE-TRIAL PROCEDURES IN INVESTIGATIONS OF HOW GENERAL NAME-RETRIEVAL ABILITY DIFFERS IN SKILLED AND LESS-SKILLED READERS.

THE PRESENT STUDY EMPLOYED DISCRETE-TRIAL PROCEDURES TO COMPARE THE PERFORMANCE OF SKILLED AND LESS-SKILLED READERS OF DIFFERENT AGES ON PICTURE, LETTER, AND WORD NAMING TASKS. IT IS ASSUMED THAT IF LACK OF PROFICIENCY IN READING SKILL IS DUE TO A GENERAL NAME-RETRIEVAL DEFICIT (E.G., DENCKLA AND RUDEL, 1976; SPRING AND CAPPS, 1974), THEN THE SKILLED READERS SHOULD BE ABLE TO NAME EACH STIMULUS TYPE MORE RAPIDLY THAN THE LESS-SKILLED READERS. HOWEVER, IF THERE IS NO SUCH GENERAL

NAME-RETRIEVAL DEFICIT, AND THE DEFICIENCY CENTERS AROUND THE ABILITY TO RAPIDLY DECODE WORDS (E.G., GOLINKOFF, 1978; ROZIN AND GLEITMAN, 1977; VELLUTINO, 1977), THEN THE SKILLED READERS SHOULD ONLY BE MORE RAPID IN NAMING THE WORDS, AS OPPOSED TO THE LESS-SKILLED READERS. TO EXAMINE THIS LATTER POSSIBILITY, THE SUBJECTS ALSO PERFORMED THREE TASKS DESIGNED TO ASSESS THEIR SKILLS IN PHONOLOGICAL ANALYSIS.

METHOD

SUBJECTS

THE SUBJECTS WERE 37 SKILLED AND LESS-SKILLED THIRD AND SIXTH GRADE READERS. THE LESS-SKILLED READERS WERE SELECTED FROM A GROUP OF CHILDREN WHO HAD BEEN IDENTIFIED BY THEIR SCHOOL AS HAVING LEARNING DISABILITIES IN READING. THE SKILLED READERS WERE SELECTED FROM A GROUP OF CHILDREN WHO WERE IDENTIFIED BY THEIR SCHOOL AS BEING NORMAL READERS.

PROCEDURE

EACH SUBJECT WAS TESTED INDIVIDUALLY IN A SESSION THAT LASTED APPROXIMATELY 30 MINUTES. FIRST, SUBJECTS RECEIVED A STANDARDIZED ACHIEVEMENT TEST (WRAT). NEXT, SUBJECTS PERFORMED PICTURE (LINE DRAWINGS OF SIMPLE OBJECTS), LETTER (LOWER CASE), WORD (REGULAR AND IRREGULAR) NAMING TASKS. IN EACH CASE SUBJECTS RAPIDLY NAMED STIMULI THAT WERE PRESENTED INDIVIDUALLY VIA A SLIDE PROJECTOR AND AN ELECTRONIC SHUTTER. A MILLISECOND CLOCK WAS STARTED SIMULTANEOUSLY WITH STIMULUS ONSET; A VOICE-ACTIVATED RELAY STOPPED THE CLOCK WHEN THE SUBJECT RESPONDED VERBALLY TO THE

STIMULUS. FINALLY, SUBJECTS PERFORMED THREE TASKS DESIGNED TO ASSESS SKILLS IN PHONOLOGICAL ANALYSIS (ODDITY DIFFERENTIATION, RHYMING, AND STRIP CONSONANT TASKS).

RESULTS

THE MEAN WRAT SCORES, REACTION TIMES, AND ERROR RATES AS A FUNCTION OF GRADE AND READING SKILL LEVEL AND THE CORRESPONDING SIGNIFICANCE VALUES ARE DISPLAYED IN TABLE 1. THE PERFORMANCE OF THE SKILLED AND LESS-SKILLED READERS DIFFERED LITTLE ON THE PICTURE AND LETTER NAMING TASKS. IN CONTRAST, HIGHLY SIGNIFICANT DIFFERENCES WERE FOUND BETWEEN THE SKILLED AND LESS-SKILLED READERS ON BOTH THE REGULAR AND IRREGULAR WORD NAMING TASKS ($p < .001$). IN ADDITION, THE LESS-SKILLED READERS, AS COMPARED TO THE SKILLED READERS, PERFORMED SIGNIFICANTLY MORE POORLY ON EACH OF THE PHONOLOGICAL ANALYSIS TASKS. THE FINDING THAT THE LESS-SKILLED READERS FOUND THE PHONOLOGICAL ANALYSIS TASKS PARTICULARLY DIFFICULT RECEIVED FURTHER SUPPORT FROM THE FINDING THAT EVEN THOUGH THE LESS-SKILLED SIXTH GRADERS OUT PERFORMED THE SKILLED THRID GRADERS ON THE PICTURE, LETTER, AND WORD NAMING TASKS, THESE OLDER READERS STILL GENERALLY PERFORMED THE PHONOLOGICAL ANALYSIS TASKS SIGNIFICANTLY MORE POORLY THAN YOUNGER READERS.

DISUCSSION

A GENERAL NAME-TETRIEVAL DEFICIT DID NOT APPEAR TO ACCOUNT FOR THE READING PROBLEMS OF THE LESS-SKILLED READERS. INSTEAD,

READING DEFICIENCY WAS ASSOCIATED WITH A GENERAL WEAKNESS IN PHONOLOGICAL ANALYSIS SKILLS.

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TABLE 1

MEAN WRAT SCORES (GRADE LEVEL), REACTION TIMES (IN MILLISECONDS), AND ERROR RATES (IN PERCENTAGES) AS A FUNCTION OF GRADE AND READER SKILL LEVEL

	Third Grade		Sixth Grade		Grade	Skill	Grade X Skill Level
	Less-Skilled	Skilled	Less-Skilled	Skilled	F(1,33)	F(1,33)	F(1,33)
WRAT	3.27	5.49	5.92	7.57	$p < .001$	$p < .001$	N.S.
Picture RT	800	783	663	689	$p < .001$	N.S.	N.S.
Letter RT	779	698	592	551	$p < .001$	$p < .05$	N.S.
Word RT	1491	713	677	539	$p < .001$	$p < .001$	$p < .001$
Odity RT	1639	756	631	593	$p < .001$	$p < .001$	$p < .001$
Odity Error	37.8	14.2	38.5	8.1	N.S.	$p < .001$	N.S.
Rhym RT	1315	799	857	767	$p < .025$	$p < .005$	$p < .05$
RHYM Error	33.3	8.3	24.1	6.0	$p = .07$	$p < .001$	N.S.
Strip RT	1494	530	642	526	$p < .001$	$p < .001$	$p < .001$
Strip Error	5.6	0	4.4	0	N.S.	N.S.	N.S.